

1969

**OPERATING
SUMMARY**

HUNTSVILLE

water pollution control plant

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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

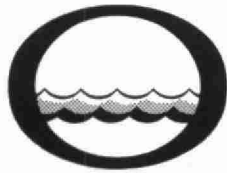
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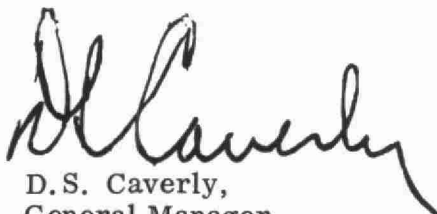
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Water Resources
Commission


135 St. Clair Ave. W.
Toronto 195
Ontario

The operating efficiency and financial status of the water pollution control facilities operated for you in 1969 are presented in the following pages.

The regional operations engineer's comments and the statistical data will assist you in gauging the plant's level of performance. A new flow chart and up-to-date design data are also provided.

Various divisions and sections within the Commission have co-operated in providing what we trust is an accurate and concise annual operating summary.


D.S. Caverly,
General Manager.


D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

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HUNTSVILLE
water pollution control plant

operated for

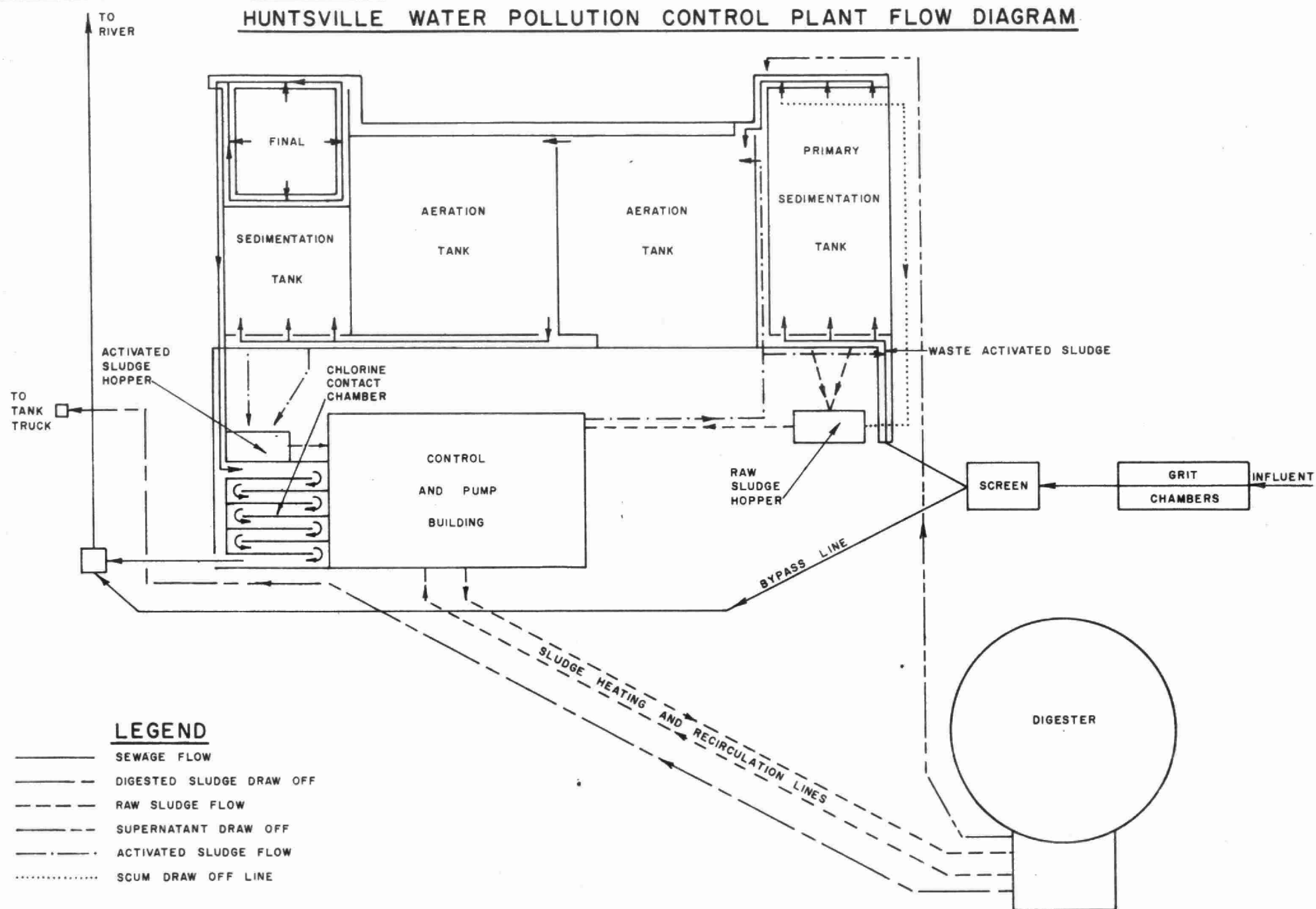
THE TOWN OF HUNTSVILLE

by the

ONTARIO WATER RESOURCES COMMISSION

1969 ANNUAL OPERATING SUMMARY

HUNTSVILLE WATER POLLUTION CONTROL PLANT FLOW DIAGRAM



DESIGN DATA

PROJECT NO.	2-0015-58	TREATMENT	Activated Sludge
DESIGN FLOW	0.25 mgd	DESIGN POPULATION	3,000
BOD - Raw Sewage	250 mg/l	SS - Raw Sewage	250 mg/l
- Removal	90-95%	- Removal	90-95%

PRIMARY TREATMENT

Grit Removal

Type: Manually cleaned channels

Size: Two 10' x 1'7" x 3'4"
(2 x 52½ cu ft)

Velocity: 0.99 fps

Screening

Type: Manually cleaned bar screen

Primary Sedimentation

Type: United Steel Corp.

Size: One 30' x 10' x 8' (15,000 gal)

Retention: 1.5 hr

Loading: Surface, 833 gal/ft²/day
Weir, 25,000 gal/ft/day

SECONDARY TREATMENT

Aeration Tanks

Type: Mechanical aeration

Size: Two 24' x 24' x 12' (87,500 gal)

Retention: 8.4 hr

Aerators: Chicago Pump (2)

Secondary Sedimentation

Type: United Steel Corp.

Size: One 30' x 13' x 12' (29,300 gal)

Retention: 2.8 hr

Loading: Surface, 640 gal/ft²/day
1 Weir, 5,300 gal/ft/day

CHLORINATION

Type: W & T

Size: One 20 lb/day

Chlorine Contact Chamber

Size: One 12' x 11½' x 10' swd
(6,250 gal)

Retention: 36 min

OUTFALL

- 105' of 15" corrugated pipe to Muskoka River

SLUDGE HANDLING

Digestion System - Single-stage

Type: Mixed by recirculation, Fairbanks-Morse, 100 gpm @ 40' tdh

Size: One 30' dia x 20' swd (15,000 cu ft or 93,500 gal)

Loading: 1.2 lb/cu ft/mo

PUMPING STATIONS

Pumping Station #1

Type: Chicago Pump

Size: Two 290 gpm

Pumping Station #2

Type: Chicago Pump

Size: Two 80 gpm

Pumping Station #3

Type: Chicago Pump

Size: One 80 gpm

'69 REVIEW

GENERAL

The project consists of a 250,000 gallon per day secondary treatment plant and three pumping stations, as well as two Town-owned pumping stations. The plant is operated by a chief operator, assisted by a town employee whose salary is not included in the operating costs. The staff carried out regular inspections and maintenance of the pumping stations and sewer system.

EXPENDITURES

The total operating cost for the year was \$14,146.12 compared with \$13,293.23 in 1968. The cost per million gallons treated was \$136.15 compared to \$137.44 in 1968.

PLANT FLOWS and CHLORINATION

A total of 103.90 million gallons was treated in 1969, compared with 96.72 mil. gal. in 1968. The average daily flows was 290,000 gallons compared with 264,000 gallons in 1968. The design flow of 250,000 gallons per day was exceeded approximately 50% of the time.

There was still a considerable amount of surface water being treated.

A total of 3557 lbs. of chlorine was used during the year to disinfect the final effluent at an average dosage of 3.4 mg/l.

PLANT EFFICIENCY

The average strength of the raw sewage was 152 mg/l BOD and 165 mg/l suspended solids. The average strength of the final effluent was 13 mg/l BOD and 28 mg/l suspended solids.

The average BOD concentration was within the OWRC objective of 15 mg/l BOD for final effluents and the average suspended solids concentration was above the objective of 15 mg/l suspended solids for final effluents.

The average reduction in BOD was 91 percent and in suspended solids was 83 percent.

An estimated 414 cubic feet of grit were removed, representing an average of 4.0 cubic feet removed per million gallons treated. This is a further indication of surface water entering the system.

AERATION

Air is supplied mechanically, and therefore the quantity of air cannot be measured. The primary effluent had an average concentration of 152 mg/l BOD and the average concentration of the mixed liquor suspended solids was 768 mg/l. The average F/M ratio was 0.67, or 67 pounds of BOD per 100 pounds of MLSS.

SLUDGE DIGESTION and DISPOSAL

Over 282,800 gallons of raw sludge was pumped to the digester. This flow is estimated. A total of 319,000 gallons of digested sludge was removed by tank truck.

CONCLUSIONS

The plant is operating at its hydraulic design load, but is treating a weak sewage as a result of dilution by surface water. The average final effluent is within the OWRC objective for BOD, but above it for suspended solids.

RECOMMENDATIONS

The program of storm water separation should be continued. A study should be made to determine future requirements.

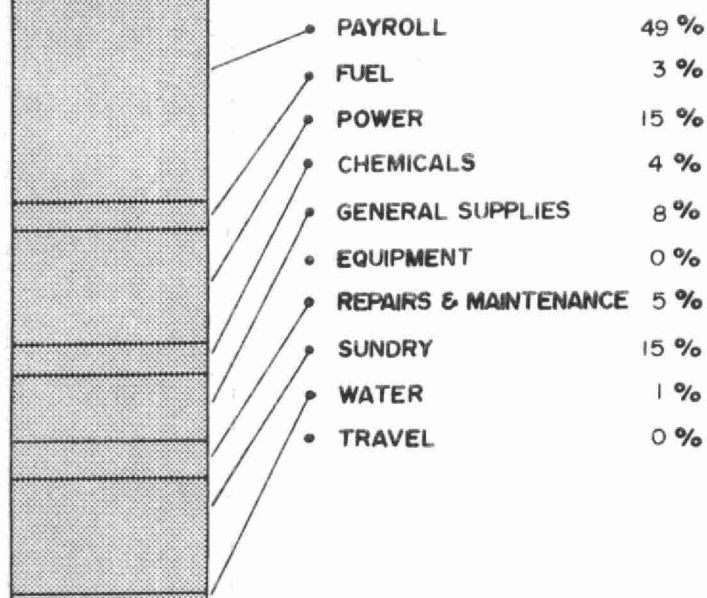
PROJECT COSTS

NET CAPITAL COST (Final)	
Long Term Debt to OWRC	\$ <u>452,388.75</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1969	\$ <u>15,519.05</u>
Net Operating	\$ 14,146.12
Debt Retirement	15,200.00
Reserve	-
Interest Charged	<u>25,326.92</u>
TOTAL	\$ <u>54,673.04</u>

RESERVE ACCOUNT

Balance @ January 1, 1969	\$ 27,848.06
Deposited by Municipality	-
Interest Earned	<u>1,616.03</u>
	\$ 29,464.09
Less Expenditures	<u>-</u>
Balance @ December 31, 1969	\$ <u>29,464.09</u>

1969 OPERATING COSTS



TOTAL ANNUAL COST

NET OPERATING	26 %
DEBT RETIREMENT	28 %
INTEREST	46 %
RESERVE FUND	0 %

Yearly Operating Costs

YEAR	MILLION GALLONS TREATED	TOTAL OPERATING COSTS	COST PER MILLION GAL	COST PER LB OF BOD REMOVED
1965	66.65	\$ 9,949.50	\$149.29	11 cents
1966	97.47	10,925.38	112.09	8 cents
1967	83.95	10,947.58	130.40	11 cents
1968	96.72	13,293.28	137.44	10 cents
1969	103.90	14,146.12	136.15	10 cents

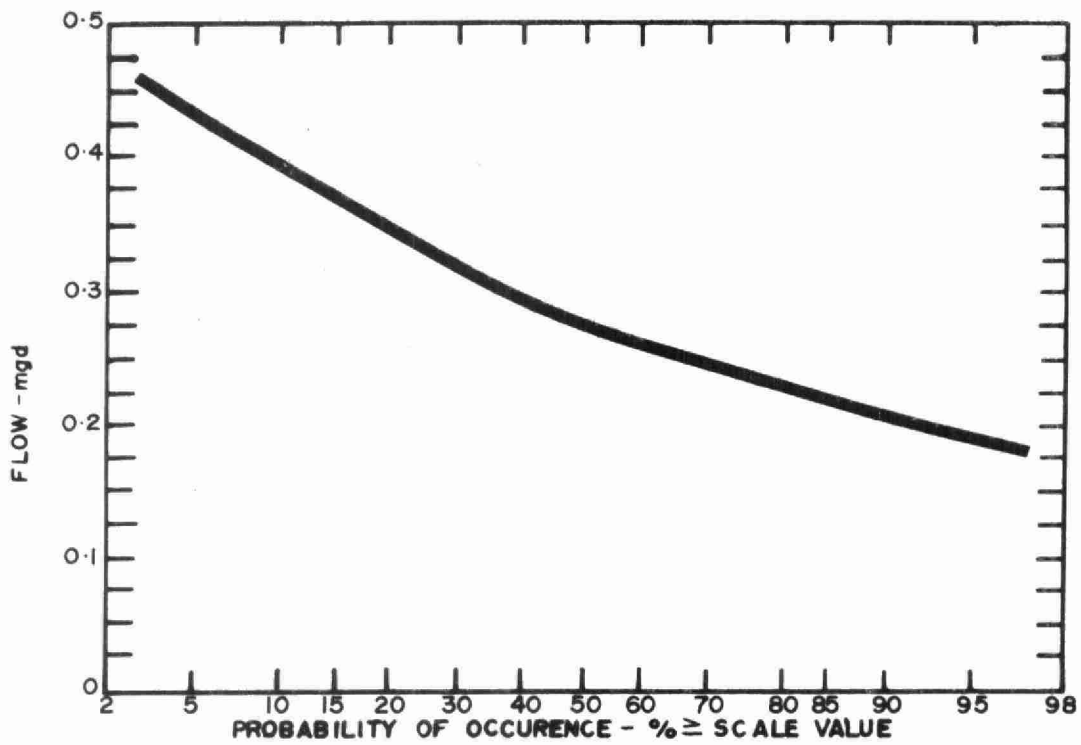
Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY *	WATER	TRAVEL
JAN	906.82	806.11	-	-	72.50	-	-	-	18.44	9.77	-	-
FEB	1015.66	497.81	-	56.10	231.28	-	76.80	-	32.65	106.67	14.35	-
MAR	1280.85	497.81	-	54.30	216.05	-	161.95	-	163.35	187.39	-	-
APR	1335.55	658.19	-	70.60	114.47	148.37	156.82	-	8.05	156.25	22.80	-
MAY	984.33	600.21	-	6.00	37.15	-	93.01	-	33.19	214.77	-	-
JUNE	1272.98	527.28	-	19.80	401.20	-	77.14	-	103.37	99.64	44.55	-
JULY	818.62	526.07	-	35.30	24.65	-	27.36	-	88.37	116.87	-	-
AUG	1560.02	765.02	-	46.20	296.57	132.30	66.98	-	-	225.15	27.80	-
SEPT	882.57	527.48	-	25.30	19.02	132.30	116.92	-	50.27	11.28	-	-
OCT	1049.36	510.00	-	27.60	297.44	-	45.28	-	-	135.84	33.20	-
NOV	923.41	521.25	-	30.40	18.40	-	77.26	-	115.71	160.39	-	-
DEC	2041.85	530.84	-	2.55	327.70	132.30	216.80	-	119.35	770.61	15.80	-
TOTAL	14146.12	6968.07	-	374.15	2056.43	545.27	1116.32	-	732.75	2194.63	158.50	-

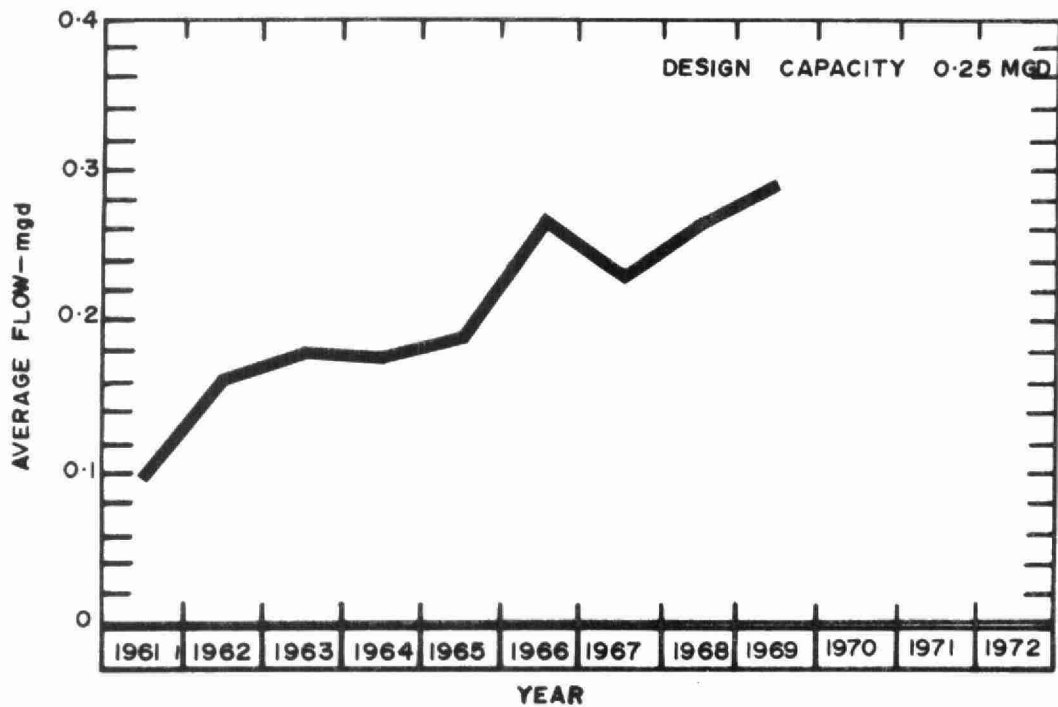
BRACKETS INDICATE CREDIT

* SUNDRY INCLUDES SLUDGE HAULAGE COSTS WHICH WERE \$1,437.70

PROCESS DATA

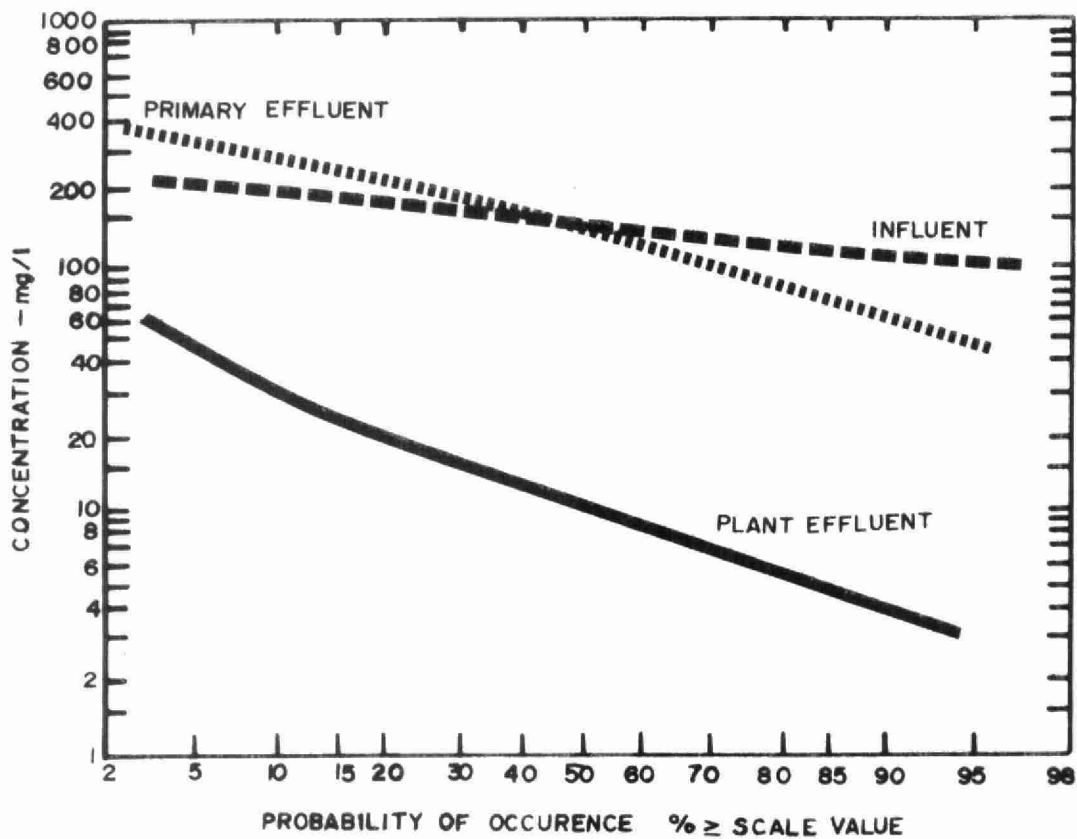


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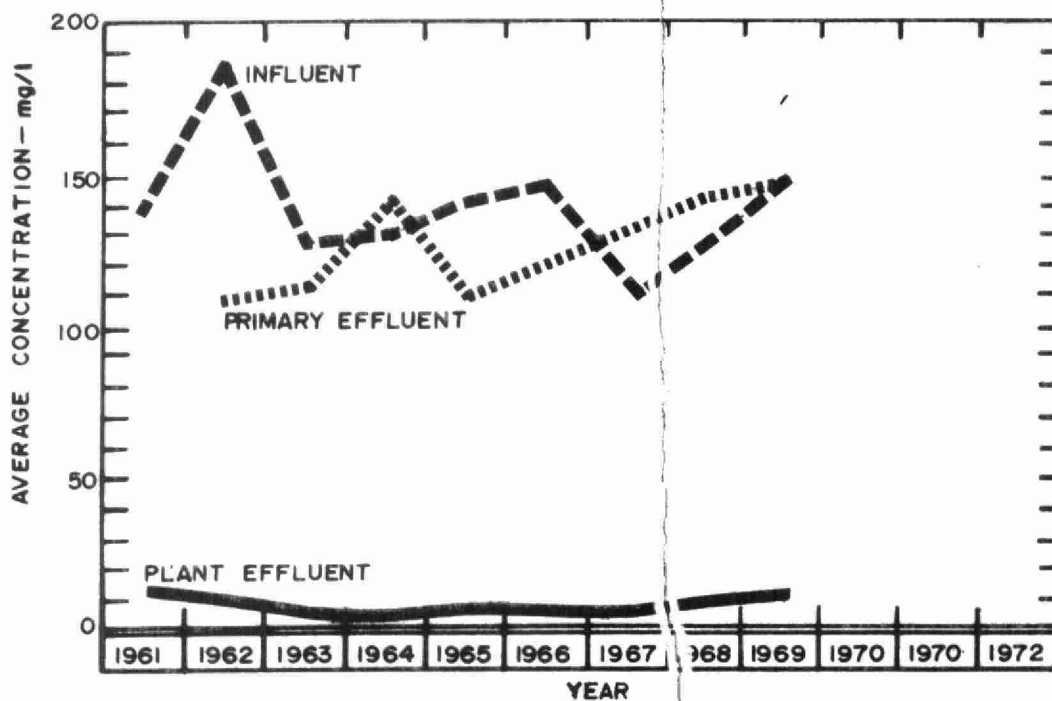


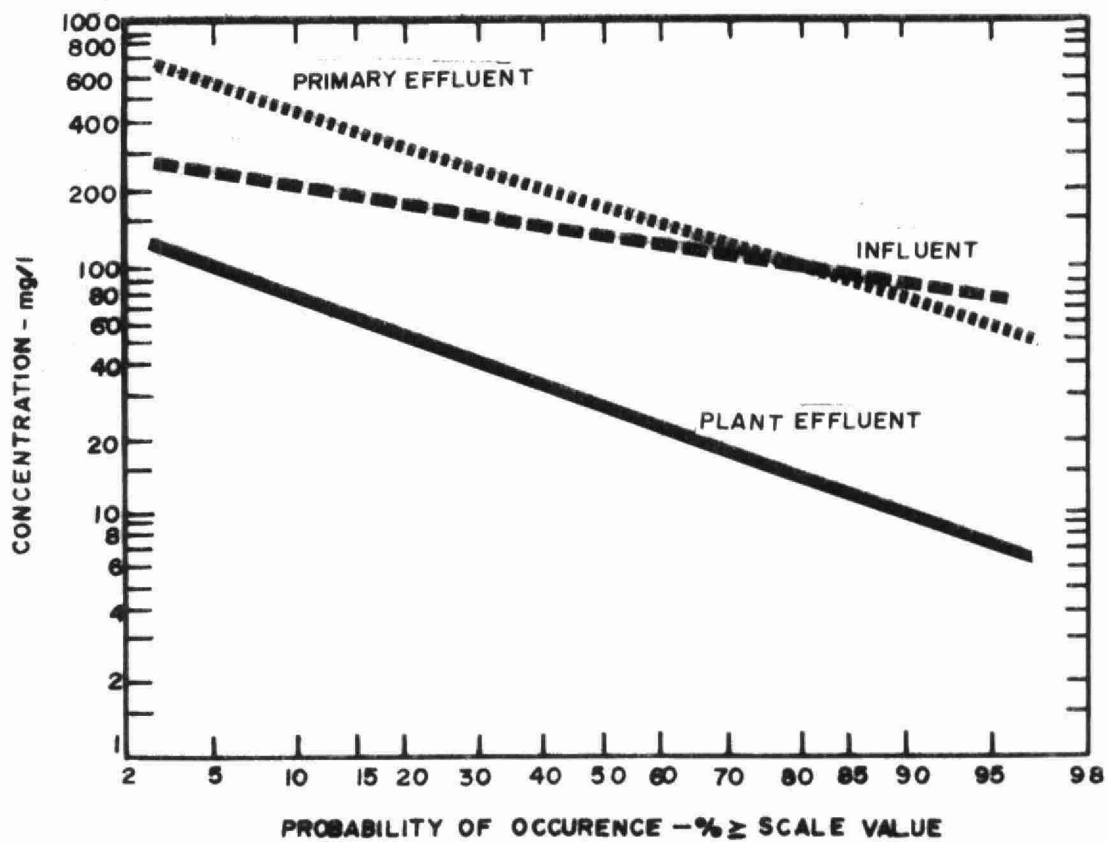
PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mil gal	AVERAGE DAILY FLOW mil gal	MAXIMUM DAILY FLOW mil gal	MINIMUM DAILY FLOW mil gal	CHLORINE USED pounds	DOSAGE mg/l
JAN	7.19	.23	.45	.15	199	2.8
FEB	6.92	.25	.55	.21	189	2.7
MAR	8.41	.27	.46	.14	237	2.8
APR	11.86	.40	.54	.19	247	2.1
MAY	12.00	.39	.54	.25	242	2.0
JUNE	8.57	.29	.36	.23	244	2.8
JULY	8.42	.27	.35	.19	411	4.9
AUG	11.16	.36	.43	.10	524	4.7
SEPT	6.70	.19	.30	.14	392	5.9
OCT	7.29	.24	.37	.15	342	4.7
NOV	9.49	.32	.48	.20	313	3.3
DEC	5.89	.19	.24	.15	217	3.7
TOTAL	103.90	-	-	-	3557	-
AVERAGE	-	.29	-	-	296	3.4

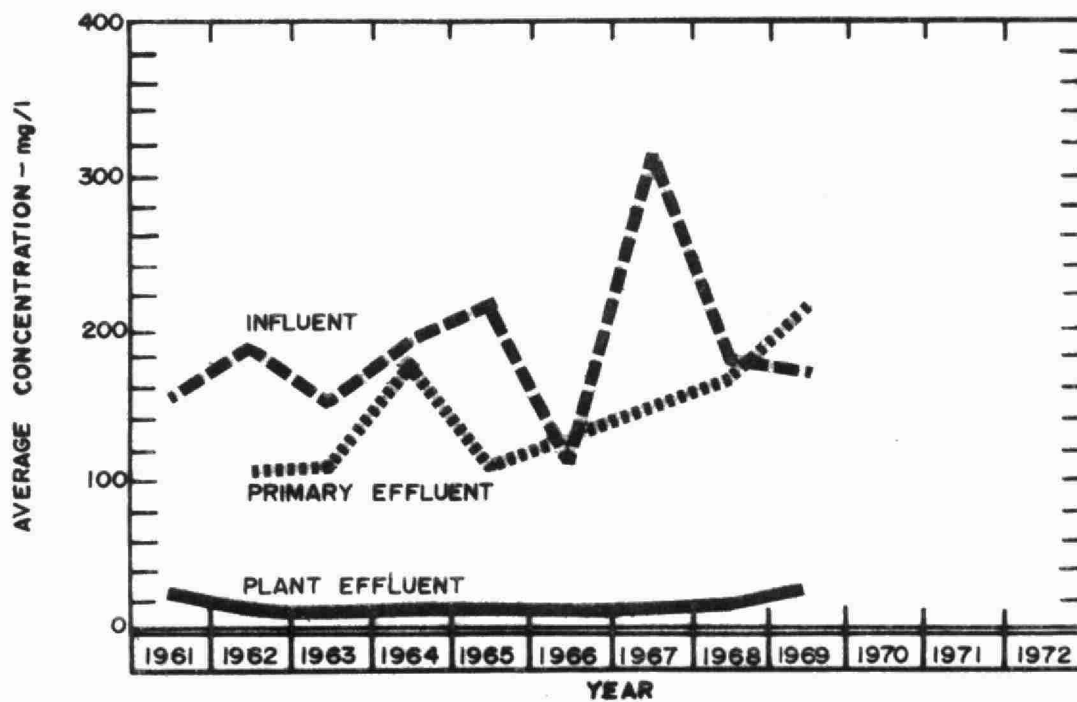


BIOCHEMICAL OXYGEN DEMAND





SUSPENDED SOLIDS



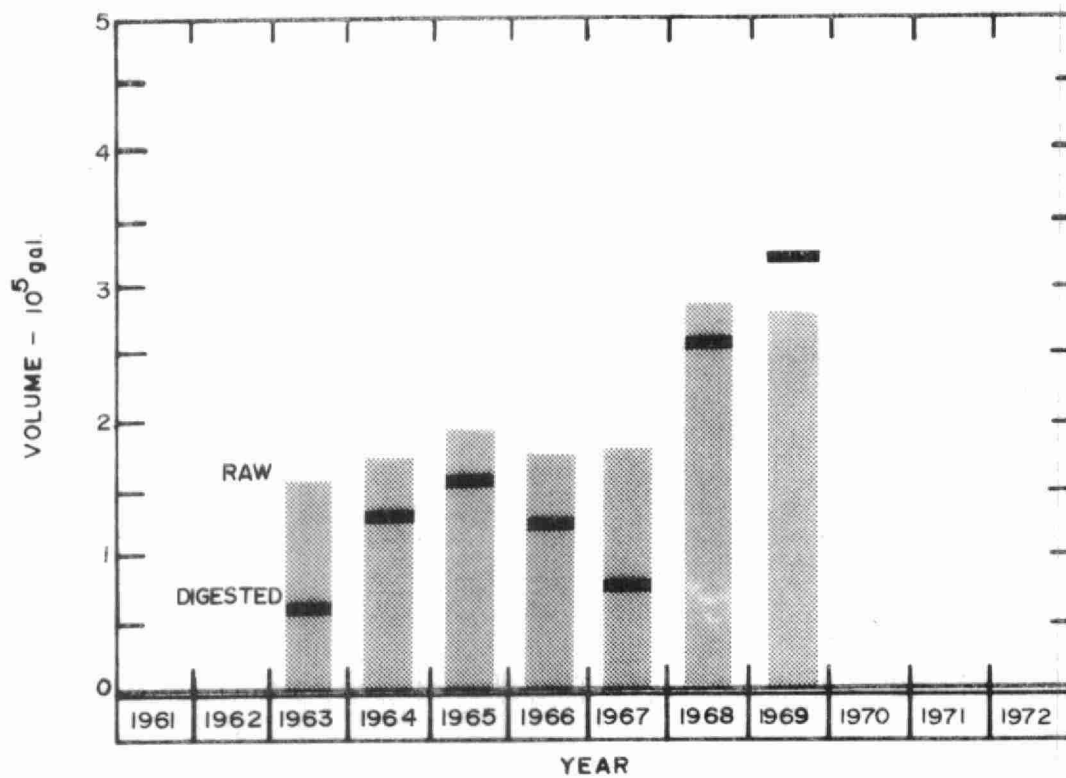
PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT REMOVAL
	INF. mg/l	EFF. mg/l	REDUCTION		INF. CONCN mg/l	EFF. CONCN mg/l	REDUCTION		
			%	10 ³ pounds			%	10 ³ pounds	cu
JAN	200	4	98	14.1	150	10	93	10.6	156
FEB	140	7	95	9.2	130	20	84	7.6	9
MAR	85	9	89	6.4	240	20	92	18.5	11
APR	117	7	94	13.0	130	15	88	13.6	20
MAY	165	7	96	19.0	135	10	93	15.0	12
JUNE	118	6	95	9.6	105	13	88	7.9	15
JULY	180	26	86	13.0	130	65	50	5.4	28
AUG	187	32	83	17.3	362	63	83	33.4	29
SEPT	150	6	96	9.6	130	17	87	7.6	33
OCT	175	11	94	12.0	205	17	92	13.7	50
NOV	157	34	78	11.7	155	70	55	8.1	37
DEC	145	11	92	7.9	110	20	82	5.3	14
TOTAL	-	-	-	-	-	-	-	-	414
AVERAGE	152	13	91	11.9	165	28	83	12.2	35

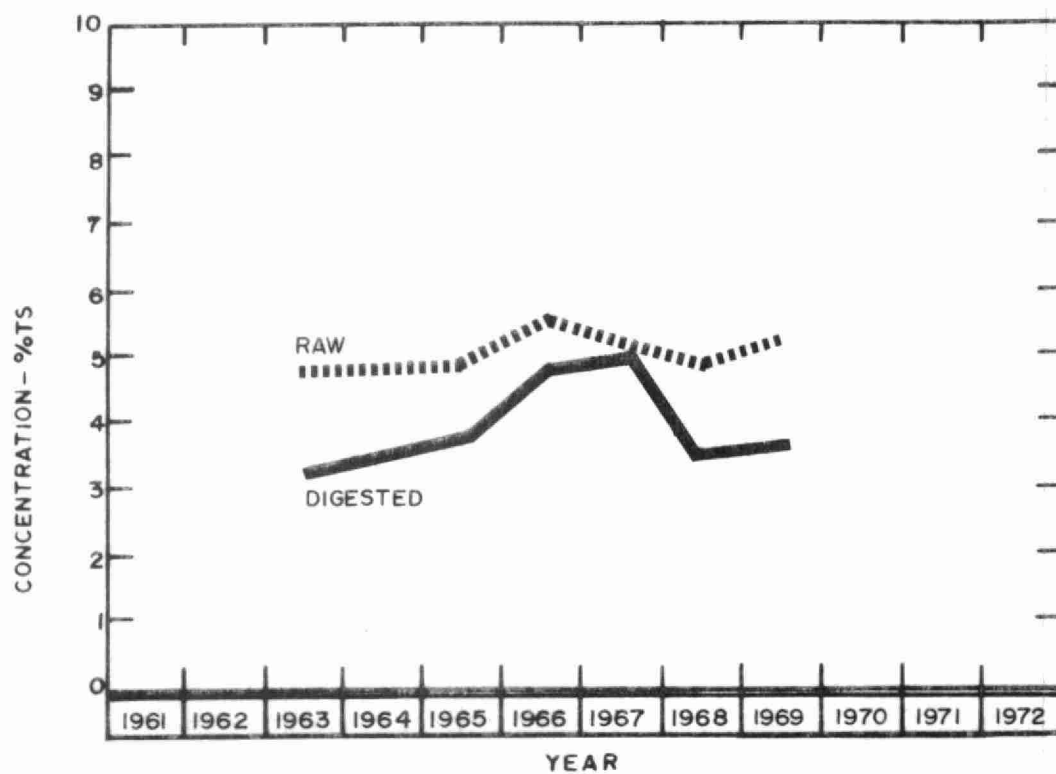
AERATION

MONTH	AVG DAILY FLOW mil gal	AERATION INF.		SECONDY. EFF.		MLSS CONCN mg/l	F/M lb BOD lb MLSS	AIR USED 1000 cu ft lb BOD	WASTE SLUDGE lb/DAY
		BOD	SS	BOD	SS				
		mg/l	mg/l	mg/l	mg/l				
JAN	.23	550	1000	4	10	1150	1.27	-	-
FEB	.25	240	565	7	20	1310	.52	-	-
MAR	.27	180	490	9	20	640	.87	-	-
APR	.40	113	135	7	15	700	.72	-	-
MAY	.39	185	195	7	10	920	.90	-	-
JUNE	.29	120	150	6	13	660	.60	-	-
JULY	.27	90	115	26	65	580	.48	-	-
AUG	.36	104	115	32	63	630	.68	-	-
SEPT	.19	120	120	6	17	730	.35	-	-
OCT	.24	135	150	13	10	610	.61	-	-
NOV	.32	138	180	52	60	620	.82	-	-
DEC	.19	245	140	12	25	660	.81	-	-
TOTAL	-	-	-	-	-	-	-	-	-
AVERAGE	.29	152*	214*	15	28	768	.67*	-	-

* Does not include January results



DIGESTION



SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	VOL SOLIDS	VOLUME	TOTAL SOLIDS	DEWATERED	LIQUID
	10 ³ gal	%	%	10 ³ gal	%	%	10 gal	%	cu yd	cu yd
JAN	22.7	4.1	-	19.2	2.4	-	-	1.9	0	114
FEB	26.8	5.7	53	33.4	2.8	-	-	2.1	0	198
MAR	24.7	5.7	-	28.3	2.9	-	-	0	0	168
APR	22.1	7.4	-	27.2	3.8	-	-	.2	0	162
MAY	14.3	3.6	56	7.1	3.9	-	-	0	0	42
JUNE	24.0	5.2	-	21.2	5.5	-	-	.2	0	126
JULY	28.6	4.8	59	40.4	3.7	41	-	2.6	0	240
AUG	31.6	4.7	54	24.3	5.5	40	-	.2	0	144
SEPT	15.4	7.2	23	19.1	6.4	42	-	-	0	114
OCT	22.5	5.3	52	33.4	2.2	42	-	-	0	198
NOV	24.6	5.2	51	25.3	2.3	40	-	-	0	150
DEC	25.5	3.8	67	40.1	2.9	40	-	-	0	240
TOTAL	282.8	-	-	319.0	-	-	-	-	0	1896
AVERAGE	23.6	5.2	51	26.6	3.7	41	-	1.2	0	158

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